Prepared	Sun Jing
Checked	Kenneth Hsu
Approved	H. Yuki

Product Specifications

AN7583

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Structure	Silicon Monolithic Bipolar IC
Appearance	SIL-12 Pins Plastic Package (Power-type with Fin)
Application	Low Frequency Amplifier
Function	Dual 10W + Single 18W Audio Power Amplifier Built-in Muting Circuit Incorporating Protection Circuit

MSCS 04.06.03 DOCUMENT CONTROL

A	Absolute Maximum Ratings				
No.	Item	Symbol	Ratings	Unit	Note
1	Storage Temperature	Tstg	-55 ~ +150	°C	1
2	Operating Ambient Temperature	Topr	-25 ~ +75	°C	1
3	Operating Ambient Pressure	Popr	$1.013 \times 10^5 \pm 0.61 \times 10^5$	Pa	
4	Operating Constant Acceleration	Gopr	9,810	m/s^2	
5	Operating Shock	Sopr	4,900	m/s^2	
6	Supply Voltage	Vcc	35.0	V	
7	Supply Supply Current	Icc	8.0	A	
8	Power Dissipation	P_D	37.5	W	2

Power Supply Voltage Range	Vcc	10.0 V ~ 32.0V

Note) 1. Except these items, all other measurements are taken at Ta = 25°C.

2. Ta = 75°C with infinite heatsink.

APPROVED 05. JUN 2003 QA

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B Electrical Characteristics (Unless otherwise specified, the ambient temperature is 25·C ± 2·C, f=1kHz, RL=8Ω and Vcc=26V.)

No.	Item	Symbol	Condition	Limit			Unit	Note
				Min	Typ	Max		
1	Quiescent Current	ICQ	Vin=0mV	-	100	200	mA	
2	Output End Noise Voltage	Vno	No Input Rg = 10kΩ	-	0.22	0.4	mV	1
3	Voltage Gain	Gv	Vin = 57mV	32	34	36	dB	
4	Total Harmonic Distortion	THD	Vin = 57mV	-	0.2	0.4	%	
5	Maximum Output Power Channel 1 or 2	Po1	THD = 10%	8	10	-	W	
6	Maximum Output Power Channel 3	Po2	RL = 4Ω THD = 10%	15	18	-	W	
7	Ripple Rejection Ratio	RR	Vr=1Vrms, fr=120Hz Rg=10kΩ	45	53	-	dB	1
8	Channel Balance	CB	Vin = 57mV	-1.0	0	1.0	dB	
9	Muting Ratio	MR	Vin = 57mV	70	80	-	dB	
10	Muting Control Voltage	Vmute	Vin = 57mV MR > 70dB	3.0	-	-	V	
11	Channel Crosstalk	CT	Vin = 57mV Rg = 10kΩ	50	60	-	dB	

Note 1) For this measurement, use the 20Hz~20kHz (12dB/OCT) filter.

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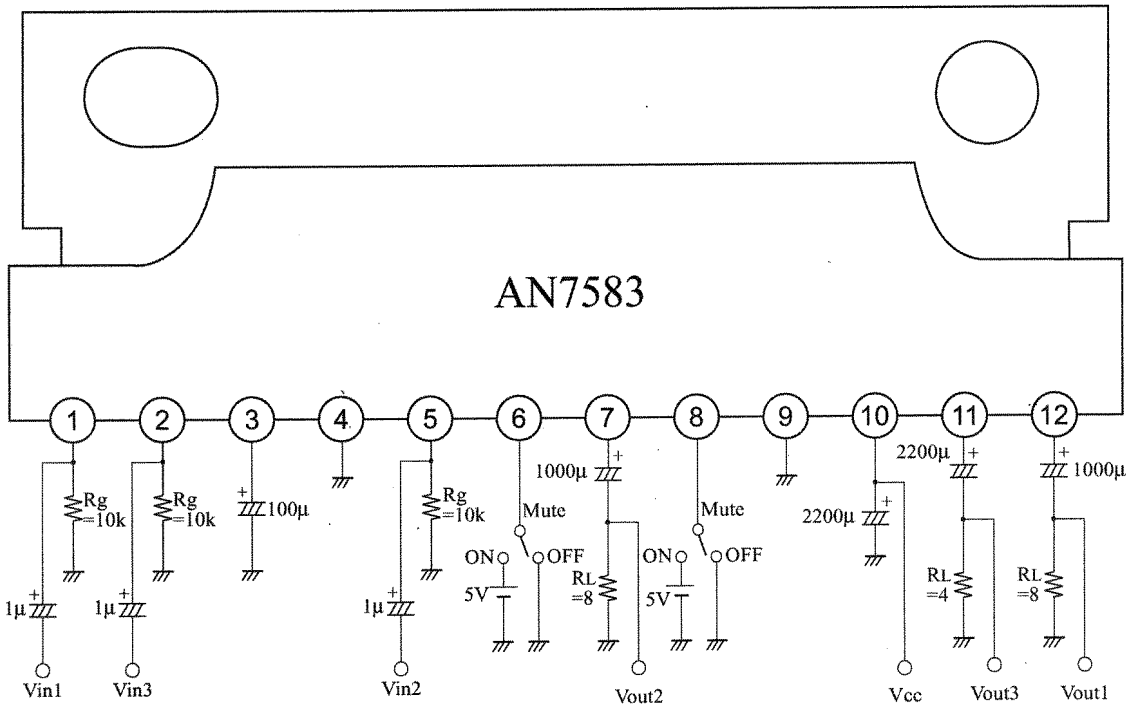
Description of Test Circuits and Test Methods

Test Circuit



Note: MUTE 'OFF', connect to 0V.

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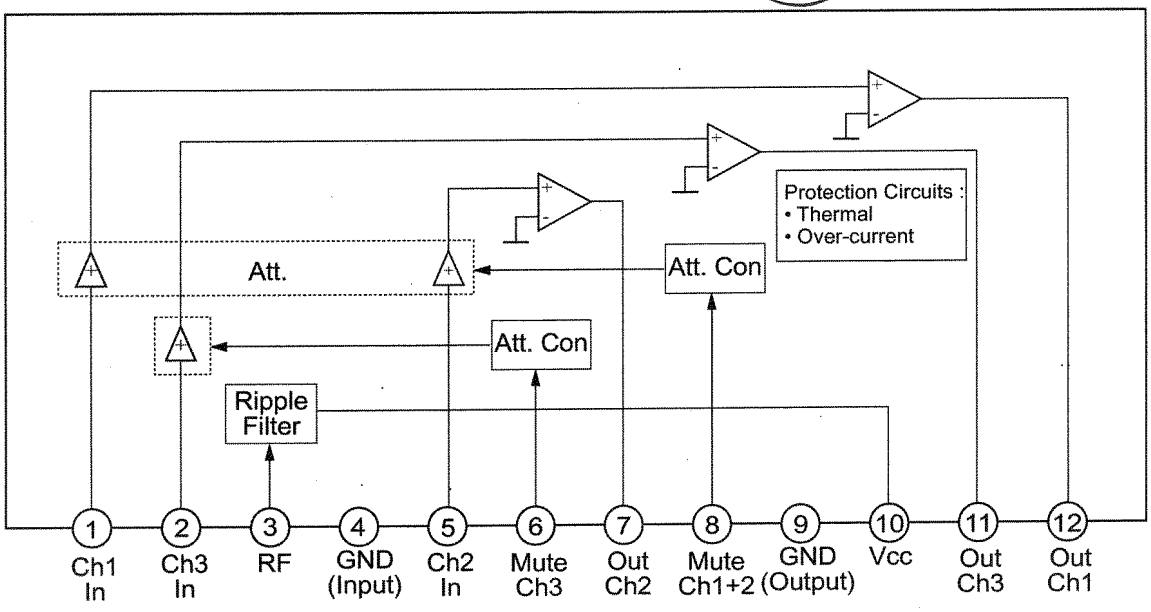
Circuit Function Block Diagram



Pin Descriptions

Pin No.	Pin Name	Pin No.	Pin Name
1	Channel 1 Input	7	Channel 2 Output
2	Channel 3 Input	8	Channel 1 & 2 Mute
3	Ripple Filter	9	Output GND
4	Input GND	10	Vcc
5	Channel 2 Input	11	Channel 3 Output
6	Channel 3 Mute	12	Channel 1 Output

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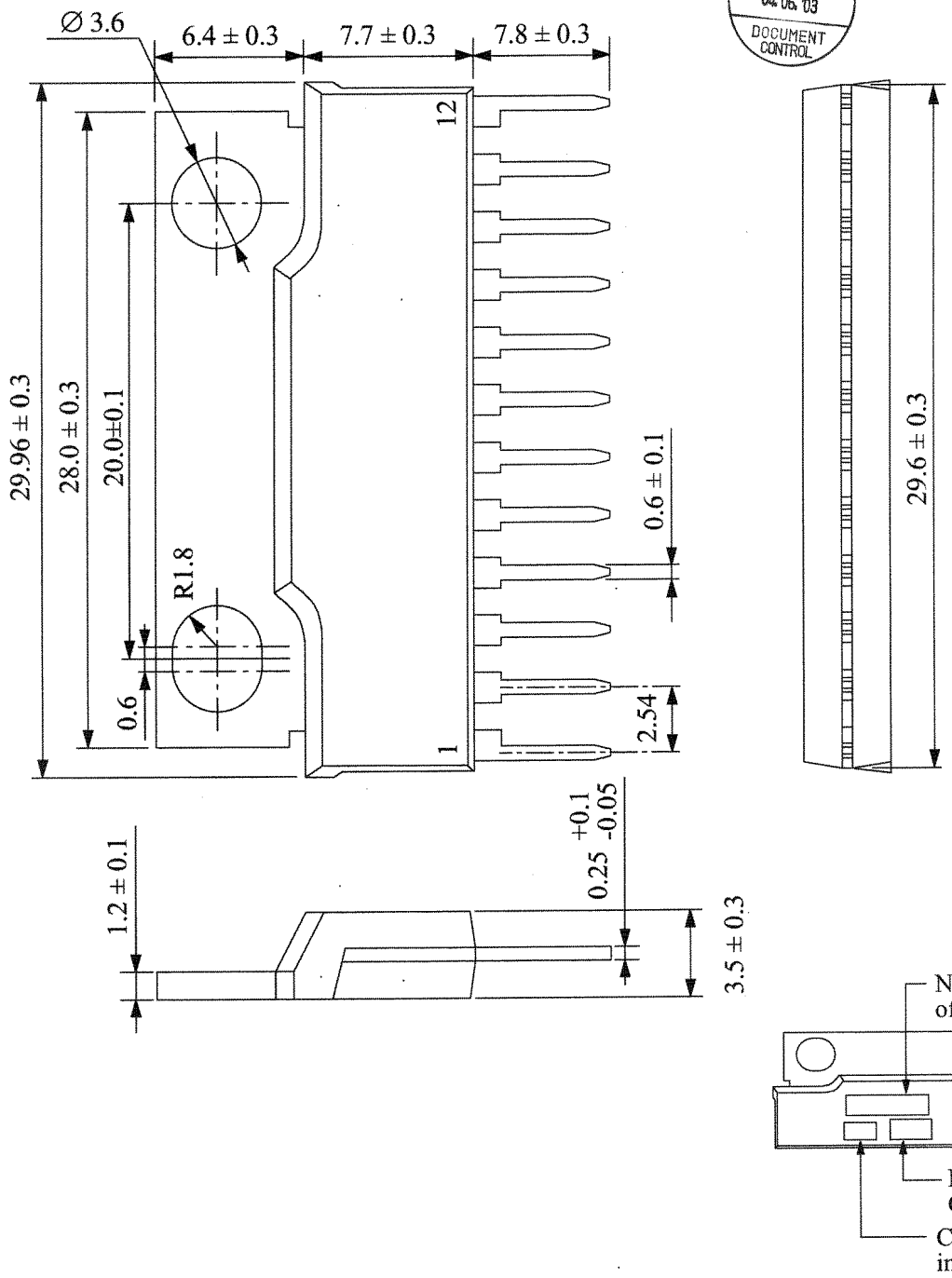
Package Name	FP-12S

Unit : mm



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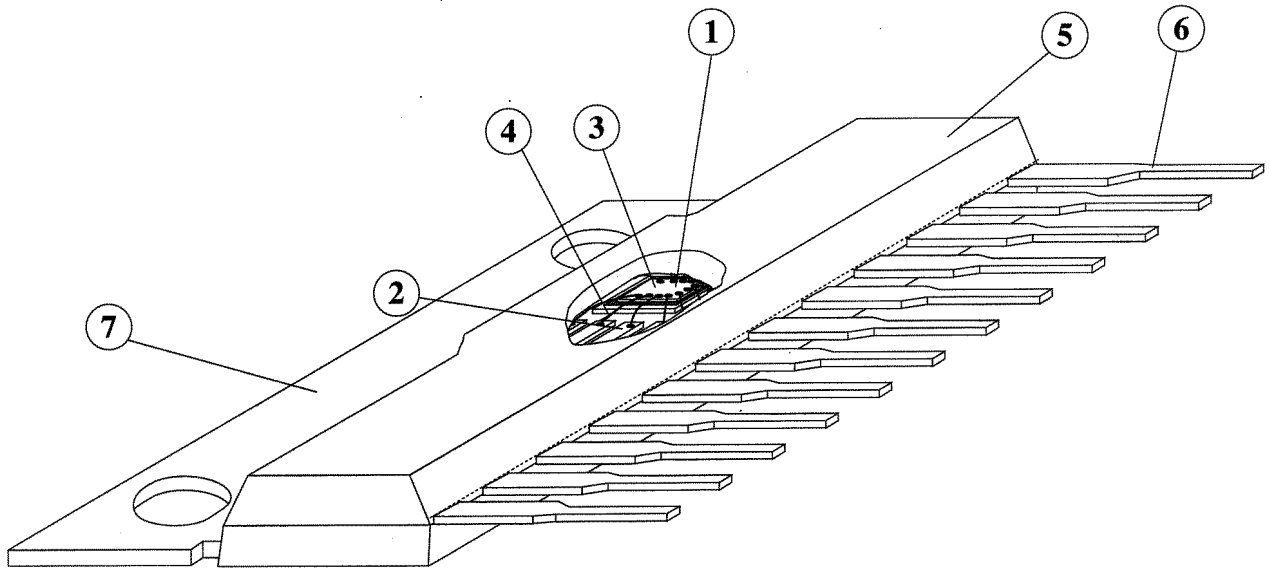
(Structure Description)

Chip surface passivation	[SiN,] PSG, Others ( )	(1)
Lead frame material	Fe group, [Cu group,] Others ( )	(2), (6)
Inner lead surface process	[Ag plating,] Au plating, Others ( )	(2)
Outer lead surface process	Solder plating, [Solder dip,] Others ( )	(6)
Chip mounting method	Ag paste, Au-Si alloy, [Solder,] Others ( )	(3)
Wire bonding method	[Thermalsonic bonding,] Others ( )	(4)
Wire material	[Au,] Others ( )	(4)
Mold material	[Epoxy,] Multiplunger mold, Others ( )	(5)
Molding method	[Transfer mold,] Others ( )	(5)
Heat Fin Material	Fe group, [Cu group,] Others ( )	(7)

Package FP-12S



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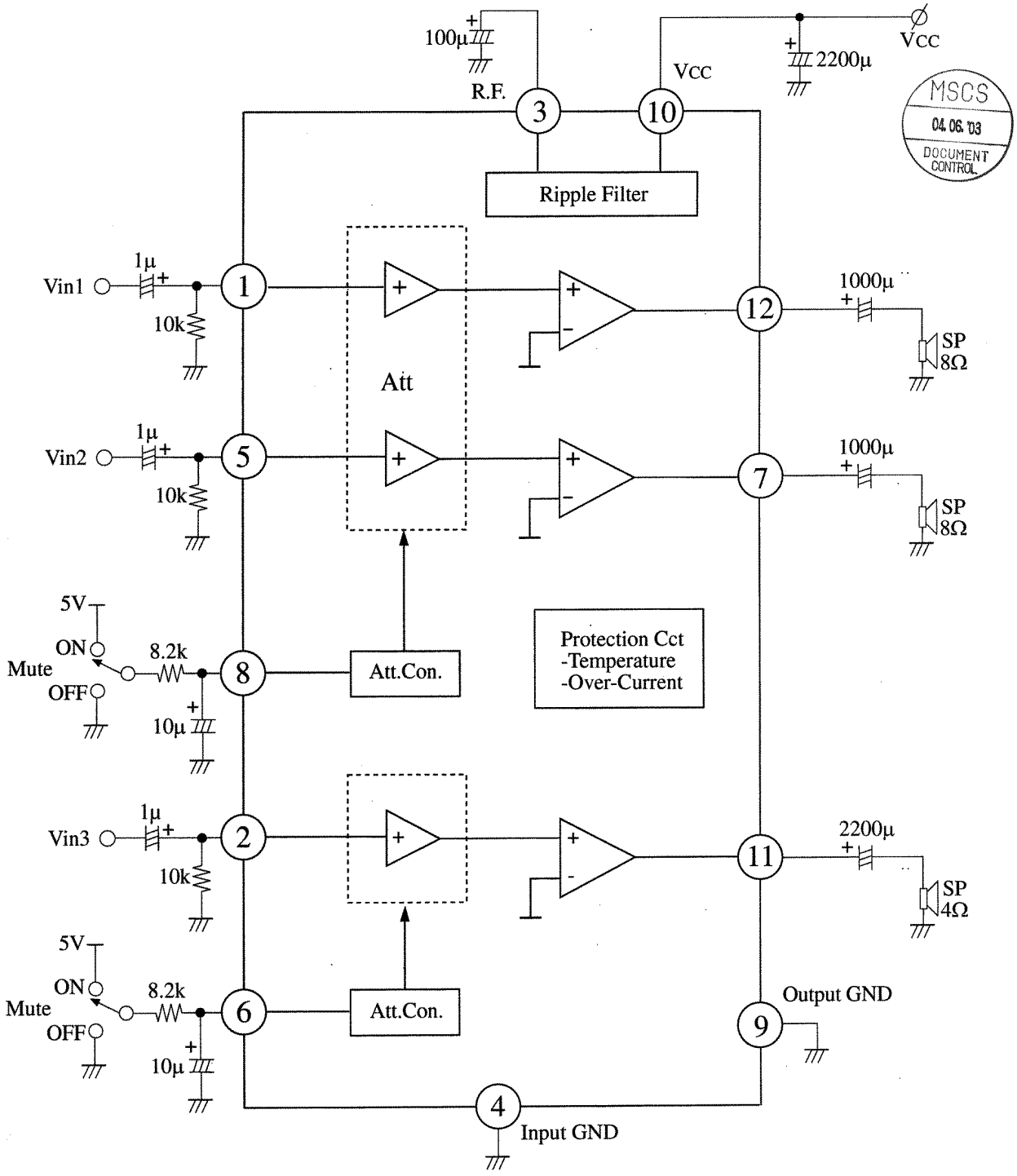
Application Circuit



Mute 'OFF'	0V
Mute 'ON'	5V

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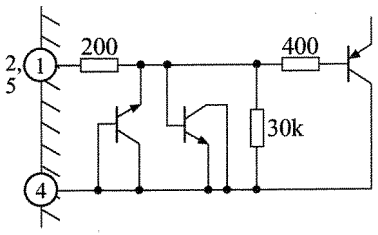
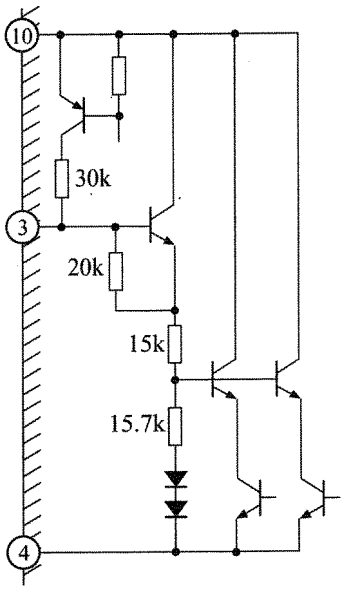
Pin No.	Function	Adjacent Circuitry	Description	DC Bias (V)
1 2 5	Input		This is the amplifier input pin.	0V
3	Ripple Filter		This is the pin to connect the positive terminal of a ripple filter capacitor.	Vcc-1.5VBE
4	Input GND		Input ground pin.	0V

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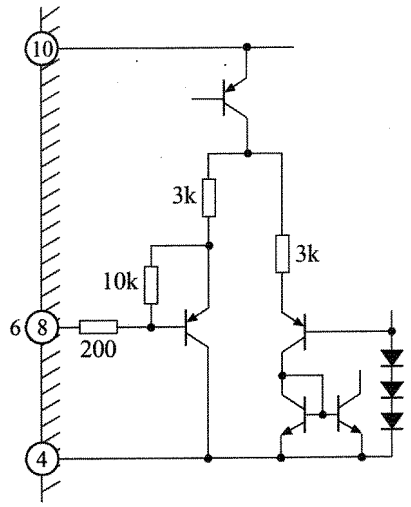
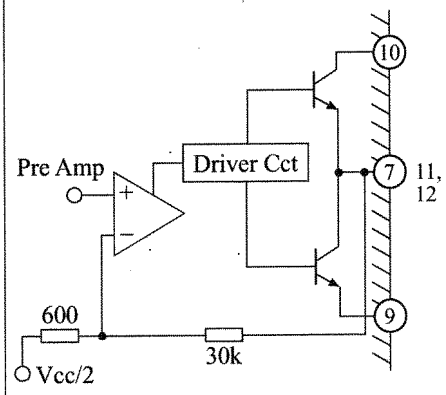
Pin No.	Function	Adjacent Circuitry	Description	DC Bias (V)
6, 8	Ch3 Mute Ch1 & 2 Mute		Mute input pin. Mute 'On' = 5V Mute 'Off' = 0V	
7 11, 12	Output		Output pin	Vcc/2
9	Output GND		Output ground.	0V
10	Vcc		This is the power supply pin.	Typ: 26V

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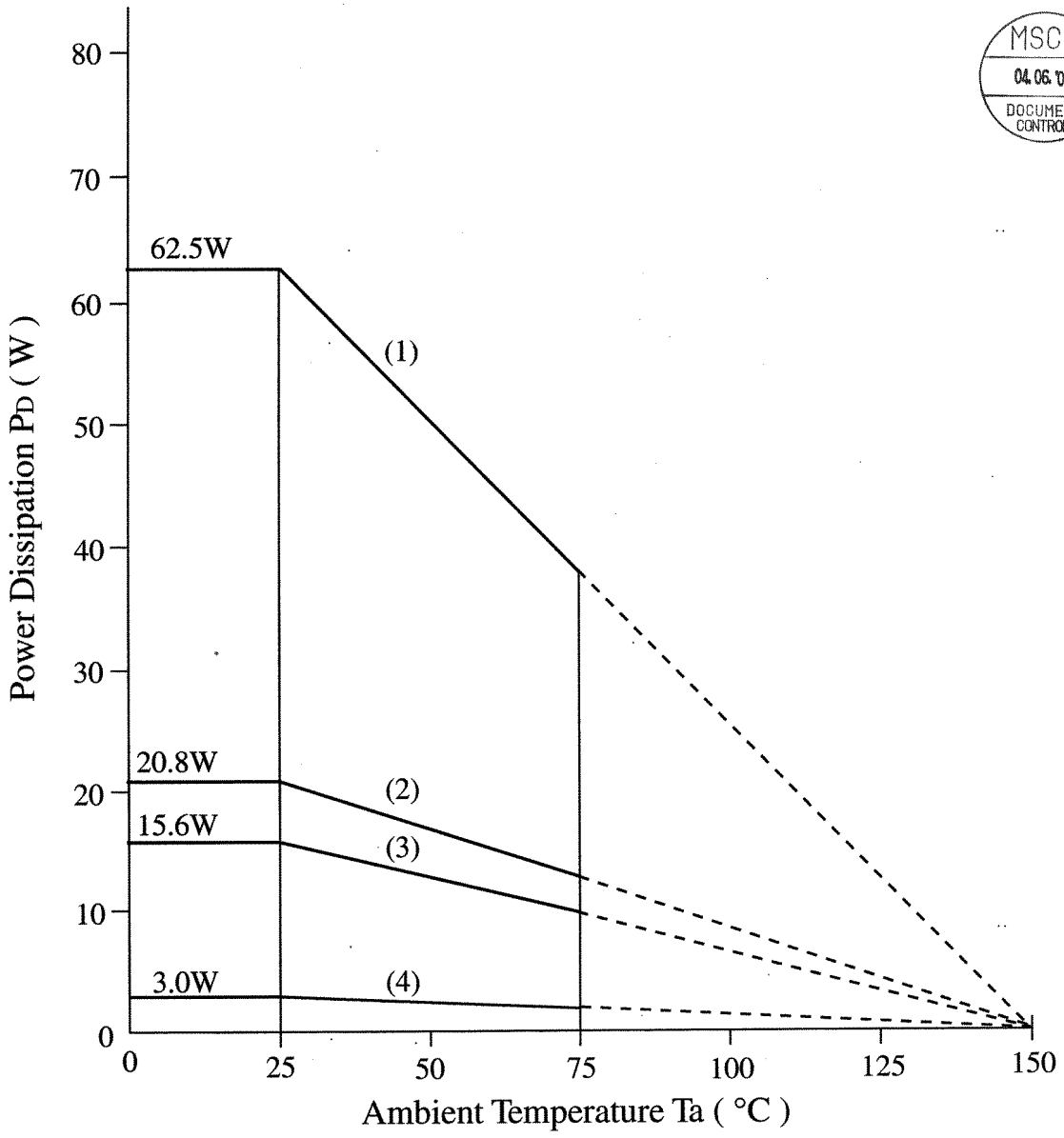
PD - Ta Curves

(1) Tc=Ta, 62.5W (θj-c=2°C/W)

(2) 20.83W (θf=4.0°C/W)
With a 100cm² x 3mm Al heat sink (black colour coated)
or a 200cm² x 2mm Al heat sink (not lacquered)

(3) 15.63W (θf=6.0°C/W)
With a 100cm² x 2mm Al heat sink (not lacquered)

(4) 3.0W at Ta=25°C (θj-a = 42°C/W)
Without heat sink



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Application's Precautions

(1) External heatsink is needed when used. External heatsink should be fixed to the chassis.

(2) Fin of the IC can be connected to GND.

(3) Please prevent "Adjacent Pin Short", "Pin to Ground Short", "Pin to Vcc Short", "Pin Shift", "Reverse Insertion" and " Load Short above Vcc = 26V"

(4) When operating beyond Vcc = 30V, the mute pin should be in the ON state before doing Vcc ON/OFF.

(5) The temperature protection circuit will operate at Tj around 150°C.
However, if temperature decrease, the protection circuit will automatically be deactivated and resume normal operation.

(6) For the condition of chip junction temperature below the minimum thermal shutdown temperature, under continuous operation, this will not cause damage to the IC for the recommended application. The minimum thermal shutdown temperature of this IC is 140°C. This value is provided as a design reference and it is not guaranteed by testing.